

REVISED CLAIMS

1. Stiffness-taper tubing comprising at least two kinds of resins, a first resin and a second resin, that have different stiffness, and which are joined such that the stiffness gradually changes in the lengthwise direction, and where a section is formed in the transition section between said first resin and said second where simple surface contact between both resins is broken down and the resins are uniformly mixed together.

2. A method for manufacturing stiffness-taper tubing wherein an extrusion mold comprising a die having an extrusion hole, a die holder for holding said die, and mandrel which is mounted inside said die holder and fits in said extrusion hole, is used to form stiffness-taper tubing by joining said first and second resins having different stiffness such that the stiffness gradually changes in the lengthwise direction, and wherein said first resin and second resin flow together in a cylindrical space that is formed between said die holder and said mandrel in such manner that simple surface contact between both resins is broken down and the resins are uniformly mixed together.

3. An apparatus for manufacturing stiffness-taper tubing comprising a die having an extrusion hole, a die holder for holding said die, and a mandrel which is mounted inside said die holder and fits in said extrusion hole, and which forms stiffness-taper tubing by switching between and supplying resins having different stiffness over said mandrel from a plurality of resin-supply ports that are formed in said die holder such that the stiffness gradually changes in the lengthwise direction, and

wherein; a mandrel insertion hole that connects to said extrusion hole is formed in said die holder and said mandrel is mounted in this mandrel insertion hole, and said plurality of resin-supply ports open up to a cylindrical space that is formed between the inner surface of said mandrel insertion hole and the outer surface of said mandrel at a position that is separated from the extrusion hole in said die, and the plurality of resins flow together in this cylindrical space in such manner that simple surface contact between both resins is broken down and the resins are uniformly mixed together.

4. The apparatus for manufacturing stiffness-taper tubing of claim 3 wherein said mandrel in said mandrel insertion hole is a multi-thread screw that is formed such that the screw grooves are divided up at a plurality of positions by forming threads, that form said screw grooves, that stop part way and new threads start at an adjacent offset position.

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CLAIMS

1. Stiffness-taper tubing comprising at least two kinds of resins, a first resin and a second resin, that have different stiffness, and which are joined such that the stiffness gradually changes in the lengthwise direction, and where a section is formed in the transition section between said first resin and said second where simple surface contact between both resins is broken down and the resins are uniformly mixed together.

2. A method for manufacturing stiffness-taper tubing wherein an extrusion mold comprising a die having an extrusion hole, a die holder for holding said die, and mandrel which is mounted inside said die holder and fits in said extrusion hole, is used to form stiffness-taper tubing by joining said first and second resins having different stiffness such that the stiffness gradually changes in the lengthwise direction, and wherein said first resin and second resin flow together in a cylindrical space that is formed between said die holder and said mandrel.

3. An apparatus for manufacturing stiffness-taper tubing comprising a die having an extrusion hole, a die holder for holding said die, and a mandrel which is mounted inside said die holder and fits in said extrusion hole, and which forms stiffness-taper tubing by switching between and supplying resins having different stiffness over said mandrel from a plurality of resin-supply ports that are formed in said die holder such that the stiffness gradually changes in the lengthwise direction, and wherein; a mandrel insertion hole that connects to said extrusion

hole is formed in said die holder and said mandrel is mounted in this mandrel insertion hole, and said plurality of resin-supply ports open up to a cylindrical space that is formed between the inner surface of said mandrel insertion hole and the outer surface of said mandrel at a position that is separated from the extrusion hole in said die, and the plurality of resins flow together in this cylindrical space.

4. The apparatus for manufacturing stiffness-taper tubing of claim 3 wherein said mandrel in said mandrel insertion hole is a multi-thread screw that is formed such that the screw grooves are divided up at a plurality of positions by forming threads, that form said screw grooves, that stop part way and new threads start at an adjacent offset position.

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